



**Stantec**

**TOWN OF TECUMSEH ADDENDUM  
TO WATER AND WASTEWATER  
MASTER PLAN OLDCASTLE HAMLET  
WASTEWATER SERVICING**

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## **Sign-off Sheet**



**Stantec**

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## **Executive Summary**

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### **GENERAL**

The Oldcastle Hamlet is located in the southwest portion of the Town of Tecumseh. The Skyway Plaza Waste Water Treatment Plant (WWTP) located within the Oldcastle Hamlet was constructed in 1998 as a temporary facility to service a commercial plaza and a 22 lot residential subdivision. The majority of the Oldcastle Hamlet area is not presently serviced by an existing municipal wastewater collection and treatment system. Wastewater from the Oldcastle Hamlet area is ultimately to be conveyed to Little River Pollution Control Plant (LRPCP) and the Lou Romano Water Reclamation Plant (LRWRP) via two respective trunk sewers, one on 8th Concession Road from Highway 401 to North Talbot Road, along Oldcastle Road and Highway 3 (Southwest Tecumseh Trunk Sewer) and the other on North Talbot Road from 8th Concession Road/Oldcastle Road to Highway 401 (North Talbot Trunk Sewer). The Master Plan also outlines the future decommissioning of the Skyway Plaza WWTP and flow diversion from the Skyway Plaza WWTP to the LRPCP via the future trunk sewer.

In recent years, the Skyway Plaza WWTP has experienced periods of poor effluent quality in the Rotating Biological Contactor (RBC) facility which is considered to be attributed to high flows for extended durations. The Town has been requested by the Ministry of Environment (MOE) to review and address the effluent quality issue related to the Skyway Plaza WWTP. Since the trunk sewer from the Oldcastle Hamlet to the LRPCP is not scheduled to be constructed in the near future, flow diversion from the Skyway Plaza WWTP to the LRPCP as outlined in the Master Plan cannot address this immediate need related to the effluent quality of the Skyway Plaza WWTP. Changes to wastewater servicing strategies for the Oldcastle Hamlet area are therefore needed to address the Skyway Plaza WWTP issues.

This addendum is the documentation of changes to the Oldcastle Hamlet Wastewater Servicing strategy identified in a Water and Wastewater Master Plan for the Town of Tecumseh. The goal of this addendum is to address the capacity and effluent quality issues associated with the existing Skyway Plaza Wastewater Treatment Plant.

This addendum comprises Sections 1 to 8 inclusive and Appendix A inclusive. A brief description of each section follows.

### **SECTION 1 - INTRODUCTION**

This section describes circumstances necessitating an ESR addendum for the Water and Wastewater Master Plan. The addendum has been prepared in accordance with the Class EA process.

## **SECTION 2 – SERVICE AREAS**

This section describes the boundaries of both North Talbot Trunk Sewer and the Southwest Tecumseh Trunk Sewer service areas to ensure that they meet flow restriction requirements as specified in the 2004 Wastewater Agreement between the City of Windsor and the Town of Tecumseh.

## **SECTION 3 – WASTEWATER FLOWS**

This section outlines the existing and future projected wastewater flows based on the Master Plan, the Preliminary Design Report for Oldcastle Hamlet Wastewater Servicing, and the evaluation of historic flow data for the existing Skyway Plaza WWTP to establish design parameters.

## **SECTION 4 – DESIGN ALTERNATIVES**

This section discusses the design alternatives considered to address the capacity and effluent quality issues associated with the existing Skyway Plaza Wastewater Treatment Plant

## **SECTION 5 – PROPOSED DESIGN**

This section summarizes the proposed design including decommissioning of the Skyway Plaza WWTP and the construction of the proposed sanitary sewer along McCord Lane and DiCocco Court/Brendan Lane starting from the Skyway Plaza WWTP inlet manhole to the newly built North Talbot Trunk Sewer at the intersection of Brendan Lane and North Talbot Road.

## **SECTION 6 - ENVIRONMENTAL IMPACTS OF PROPOSED DESIGN**

This section provides an overview of the potential impacts of proposed design and proposed methods of mitigation.

## **SECTION 7 - OPINION OF PROBABLE COST**

This section summarizes probable costs for proposed sewage works with respect to capital budget probable costs (in 2013 dollars), which are summarized in the following table:

<b>OPINION OF PROBABLE COST</b>		
<b>Item</b>	<b>Explanation/ Reference</b>	<b>Probable Cost</b>
<b>Demolition of Skyway Plaza WWTP</b>	Section 5.1	\$ 62,000
<b>Construction of 250 mm dia. diversion sewer from Skyway Plaza WWTP to the LRWRP via the newly built North Talbot trunk sewer (Excludes service connections, watermain and storm sewer improvements)</b>	Section 5.2	\$ 612,200
<b>Sub-Total</b>		\$ 674,200
<b>Contingency Allowance (15%)</b>		\$ 101,100
<b>Engineering, Inspection and Contract Administration (15%)</b>		\$ 116,300
<b>Easement Acquisition</b>		\$ 50,000
<b>TOTAL CONSTRUCTION COST (Taxes Excluded)</b>		<b>\$ 941,600</b>

**SECTION 8 – SUMMARY**

This section summarizes recommendations that are made with respect to this addendum.

It is recommended that the Town proceed to detailed design and construction of the following sewage works in accordance with available funding from the capital budget:

- Demolition of Skyway Plaza WWTP
- Construction of 250 mm diameter gravity sanitary sewer to divert flow from Skyway Plaza WWTP to the LRWRP via the newly built North Talbot Trunk Sewer (Alternative No. 1)

## 1.0 INTRODUCTION

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### 1.1 BACKGROUND

The Town of Tecumseh completed a Water and Wastewater Master Plan, henceforth denoted as the Master Plan, in 2002 and amendments were made in 2005 and 2008. The Master Plan was prepared in accordance with the Class EA process to implement the preferred solution which maximizes the use of the existing infrastructure and provides capacity for new growth in designated growth areas within the Town. The completed Master Plan and amendments identify the long-term water and wastewater servicing strategies and associated capital projects to serve the urban settlement areas in the Town of Tecumseh.

The Oldcastle Hamlet is located in the southwest portion of the Town of Tecumseh adjacent to the City of Windsor as shown in **Figure 1.1**. The majority of the Oldcastle Hamlet area is not presently serviced by an existing municipal wastewater collection and treatment system. The residences, commercial properties and industries are generally serviced by private on-site sewage disposal systems typically consisting of septic tanks and leaching beds. The Skyway Plaza WWTP located within the Oldcastle Hamlet was constructed in 1998 as a temporary facility to service a commercial plaza and a 22 lot residential subdivision. This existing temporary plant has a rated capacity of 87 m<sup>3</sup>/day.

It is identified in the Master Plan that wastewater from the Oldcastle Hamlet area is ultimately to be conveyed to Little River Pollution Control Plant (LRPCP) and the Lou Romano Water Reclamation Plant (LRWRP) via two respective trunk sewers, one on 8th Concession Road from Highway 401 to North Talbot Road and the other on North Talbot Road from 8th Concession Road/Oldcastle Road to Highway 401. The proposed trunk sewers to the LRPCP and the LRWRP are shown in **Figure 1.2**. The Master Plan also outlines the future decommissioning of the Skyway Plaza WWTP and flow diversion from the Skyway Plaza WWTP to the Little River Pollution Control Plant (LRPCP) via the future trunk sewer.

Subsequent to the completion of the Master Plan update in 2008, the Town of Tecumseh has completed the “Oldcastle Hamlet Wastewater Servicing, Preliminary Design Report, dated August 7, 2009”. The Report evaluated alternative design concepts for proposed sewer systems and established the ultimate sanitary drainage areas for each of the two trunk sewers identified in the Master Plan for the Oldcastle Hamlet area. **Figure 1.2** shows the ultimate sanitary drainage areas for the two trunk sewers.

In recent years, the Skyway Plaza WWTP has experienced periods of poor effluent quality in the Rotating Biological Contactor (RBC) facility which is considered to be attributed to high flows for extended durations. The Town has been requested by the Ministry of Environment (MOE) to review and address the effluent quality issue related to the Skyway Plaza WWTP. Since the trunk sewer from the Oldcastle Hamlet to the LRPCP cannot be constructed in the near future,



flow diversion from the Skyway Plaza WWTP to the LRPCP as outlined in the Master Plan cannot address this immediate need related to the effluent quality of the Skyway Plaza WWTP. Changes to wastewater servicing strategies for the Oldcastle Hamlet area are therefore needed to address the Skyway Plaza WWTP issues. Accordingly, this addendum addresses the changes to the Master Plan related to the Oldcastle Hamlet Wastewater Servicing. This addendum should be read in conjunction with the Master Plan and the Oldcastle Hamlet Wastewater Servicing Preliminary Design Report.

## **1.2 CIRCUMSTANCES NECESSITATING AN ESR ADDENDUM**

The Master Plan Update Report dated July 31, 2008 has documented a Wastewater Servicing Strategy that will provide an ultimate consolidated servicing scheme to maximize the use of existing infrastructure and provide capacity for new growth in designated growth areas of the Town. The Oldcastle Hamlet Wastewater Servicing strategy includes the construction of two trunk sewers, one on 8th Concession Road from Highway 401 to North Talbot Road (the Southwest Tecumseh Trunk Sewer), and the other on North Talbot Road from 8th Concession Road to Highway 401 (the North Talbot Trunk Sewer). As shown in **Figure 1.2**, the strategy will provide two outlets for wastewater generated by existing and new development in the Oldcastle Hamlet Planning area, one to the LRPCP and the other to the LRWRP. According to the Master Plan, this future trunk sewer to the LRPCP will permit the Town of Tecumseh to decommission the Skyway Plaza WWTP and divert the flow to the LRPCP.

The Town, through its Wastewater Agreement with the City of Windsor, purchased a limited capacity (85 L/s) allocation at the LRWRP. In 2011, the Town has made use of that capacity for the Oldcastle Hamlet with the construction of the North Talbot Trunk Sewer, which permits the Town to convey the flow from the Oldcastle Hamlet to the LRWRP. Since sufficient funds are not available, the trunk sewer to the LRPCP cannot be constructed in the near future, thus the Skyway Plaza WWTP flows cannot be diverted to the LRPCP, and an alternative strategy to redirect flows is required to decommission the plant.

Due to the proximity of the Skyway Plaza WWTP service area to the newly built North Talbot Trunk Sewer to the LRWRP, the Town has indicated that directing sewage to the LRWRP will be more favourable to address the effluent quality and capacity issues associated with the Skyway Plaza WWTP. The newly built trunk sewer permits the Town of Tecumseh to decommission the Skyway Plaza WWTP immediately and divert the flow to the LRWRP instead of the LRPCP, thereby addressing the effluent quality and capacity issues while eliminating the ongoing operation and maintenance costs for this facility.

After a thorough review of the alternatives, the Town has decided to proceed in accordance with the Class EA process and prepare an Addendum to the Master Plan that documents the changes to the Oldcastle Hamlet Wastewater Servicing strategy.

### **1.3 MASTER PLAN AMENDING PROCEDURE**

The planning process outlined in the Municipal Class Environmental Assessment by the Municipal Engineers Association (MEA), October 2000, as amended in 2011, recognizes that a project may not proceed in the manner outlined in the Environmental Study Report (ESR) due to unforeseen circumstances. The Master Plan that is identical to an ESR and was prepared in accordance with the Class EA process.

Section A.4.2.2 from the MEA Document (October 2000, as amended in 2011) - Revisions and Addenda to the ESR, under the heading "Change in Project or Environment", states:

*"Due to unforeseen circumstances, it may not be feasible to implement the project in the manner outlined in the ESR. Any significant modification to the project or change in the environmental setting for the project which occurs after the filing of the ESR shall be reviewed by the proponent and an addendum to the ESR shall be written. The addendum shall describe the circumstances necessitating the change, the environmental implications of the change, and what, if anything can and will be done to mitigate any negative environmental impacts. The addendum shall be filed with the ESR and Notice of Filing of Addendum shall be given immediately to all potentially affected members of the public and review agencies as well as those who were notified in the preparation of the original ESR.*

*A period of 30 calendar days following the issue of the Notice of Filing of Addendum shall be allowed for review and response by affected parties. The Notice shall include the public's right to request a Part II Order within the 30-day review period. If no request is received by the Minister, the proponent is free to proceed with the implementation and construction. During the 30-day addendum review period, no work shall be undertaken that will adversely affect the matter under review. Furthermore, where implementation of a project has already commenced, those portions of the project which are the subject of the addendum, or have the potential to be directly affected by the proposed change, shall cease and shall not be reactivated until the termination of the review period."*

This Addendum to the Master Plan has been prepared in accordance with the above requirements.

## 2.0 SERVICE AREAS

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### 2.1 TRUNK SEWERS AND CORRESPONDING SERVICE AREA IN THE MASTER PLAN

The Oldcastle Hamlet area is situated in the southwest portion of the Town of Tecumseh and covers approximately 800 hectares. The Oldcastle Hamlet comprises mostly industrial with small pockets of commercial development, residential and agricultural land uses. The Master Plan identified the proposed service area for the Oldcastle Hamlet. The Land Use for the Oldcastle Hamlet area has been carefully reviewed along with existing development to more accurately define the proposed service area boundary. **Figure 2.1** shows the Official Plan Land Use for Oldcastle Hamlet and **Figure 2.2** shows the existing and future sanitary sewers and the corresponding service area boundary.

The Master Plan identified the Oldcastle Hamlet area wastewater servicing strategy. The Oldcastle Hamlet area will be serviced by LRPCP and the LRWRP in the City of Windsor. Wastewater from the Oldcastle Hamlet area is ultimately conveyed to the two plants via the following two respective trunk sewers:

- Construction of the North Talbot Trunk Sewer to address existing pollution problems associated with malfunctioning and/or inadequate private wastewater disposal systems. The North Talbot Trunk Sewer will convey the sewage flows from existing and new development areas to the LRWRP.
- Construction of the Southwest Tecumseh Trunk Sewer to provide a long term outlet for wastewater generated in the Oldcastle Hamlet to the LRPCP through the Northeast Windsor Trunk Sanitary Sewer. The Southwest Tecumseh Trunk Sewer will permit the Town to decommission the Skyway Plaza WWTP in Oldcastle Hamlet and divert sewage flow from the Skyway Plaza WWTP to the LRPCP.

The proposed trunk sewers to the LRPCP and the LRWRP are shown in **Figure 2.1**. The trunk sewers provide direct conveyance for the local wastewater collection system which consists of the sewers extending down to the service level for each user. Within the local wastewater collection system, there also exists local sewage pumping stations required to overcome grade limitations. The Master Plan also outlines the future decommissioning of the Skyway Plaza WWTP in Oldcastle Hamlet and flow diversion from the Skyway Plaza WWTP to the LRPCP.

The 2004 Wastewater Agreement between the City of Windsor and the Town of Tecumseh has identified two outlets for the Oldcastle Hamlet area; on North Talbot Road with discharge to the LRPCP and on 8th Concession Road with discharge to the LRWRP. According to the agreement, flow to the North Talbot Road outlet will be limited to 85 L/s, and flow to the 8th Concession Road outlet will be limited to 325 L/s.

Subsequent to the completion of the Master Plan update in 2008, the Town of Tecumseh has completed a Preliminary Design Report for the Oldcastle Hamlet Wastewater Servicing (dated August 7, 2009). The ultimate sanitary drainage areas for the two trunk sewers was established in the Preliminary Design Report. **Figure 2.2** shows the two trunk sewers and the corresponding service area boundaries established in the Preliminary Design Report. The boundaries of the sewage service areas for the trunk sewers are dictated by the capacity of the corresponding sanitary sewer system.

Service areas for these trunk sewers are described in the following paragraphs.

## **2.2 REVISIONS TO ULTIMATE SERVICE AREA FOR THE NORTH TALBOT TRUNK SEWER**

To address the significant pollution problem and health risks caused by inadequate and/or malfunctioning septic systems in the older industrial areas of Oldcastle, and to reduce contaminant loadings to the open drains and area watercourses, the Town of Tecumseh has extended the North Talbot Trunk Sewer from the City of Windsor's trunk sewer on North Talbot Road at Old West Avenue to 8th Concession Road in the Oldcastle Hamlet. The Town also installed a monitoring facility at the Town boundary to measure instantaneous peak flow rates into the City of Windsor's collection system.

In 2011, the Town made use of the newly constructed North Talbot Trunk Sewer, which enables the Town to utilize capacity in the LRWRP secured by the Town as part of the 2004 Wastewater Servicing Agreement. The current maximum allowable discharge rate from the Oldcastle Hamlet to the LRWRP is 85 L/s, which was determined based on conveyance capacity limitations within the existing Windsor system. The Town oversized the trunk sewer using a diameter of 600 mm in anticipation of negotiating additional conveyance capacity from Windsor at some time in the future.

This North Talbot Trunk Sewer was initially designed to provide direct servicing for properties fronting onto the new sewer, as well as an outlet for new growth in the Oldcastle Hamlet. The service area boundary proposed in the Preliminary Design Report (dated August 7, 2009) is shown on **Figure 2.2**.

The Skyway Plaza and the Piccadilly Circus Subdivisions within the Oldcastle Hamlet are serviced by local sewers draining to the Skyway Plaza WWTP. The Town's long term plan was to decommission the Skyway Plaza WWTP and divert all sewage flows to the LRPCP when the construction of the North-East Windsor Trunk Sanitary Sewer from Oldcastle Hamlet to the LRPCP is completed. The City of Windsor was able to secure Senior Government grants that enabled construction of a trunk sanitary sewer along Banwell Road to Highway 401 at the 8th Concession Road, providing a second outlet to the Oldcastle Hamlet. That outlet has been extended to County Road 46 in 2011. However, there are no plans to further extend that trunk sanitary sewer into the Oldcastle Hamlet in the near future. Flow diversion from the Skyway

Plaza WWTP to the LRPCP as outlined in the Master Plan cannot be permitted until the construction of the North-East Windsor Trunk Sanitary Sewer is fully completed.

In the past few years, the Skyway Plaza WWTP experienced periods of poor effluent quality and high flows for extended durations, therefore the temporary Skyway Plaza WWTP needs to be decommissioned sooner than originally planned. To address this immediate need, the Town intends to utilize the newly constructed North Talbot Trunk Sewer and divert the flow from the Skyway Plaza WWTP to the LRWRP. Therefore, In order to decommission the Skyway Plaza WWTP and accommodate the Skyway Plaza and the Piccadilly Circus Subdivisions currently serviced by local sewers draining to the Skyway Plaza WWTP, the service area boundary for the North Talbot Trunk Sewer was revised as depicted on **Figure 2.3**. Wastewater from the Skyway Plaza WWTP service area including the Skyway Plaza and the Piccadilly Circus Subdivisions will be conveyed by the North Talbot Trunk Sewer to the LRWRP for treatment on a temporary basis.

Flow from the revised North Talbot Trunk Sewer service area will still be limited to 85 L/s as identified in the 2004 Wastewater Agreement between the City of Windsor and the Town of Tecumseh. If the temporary sewage diversion from the Skyway Plaza WWTP becomes permanent, to satisfy the flow limitation of 85 L/s as per the Agreement, three pockets of areas originally serviced by the North Talbot Trunk Sewer or other equivalent areas in the North Talbot service area will have to be serviced by the Southwest Tecumseh Trunk Sewer (**Figure 2.3**).

### **2.3 REVISIONS TO INTERIM SERVICE AREA FOR NORTH TALBOT TRUNK SEWER**

The Preliminary Design Report for the Oldcastle Hamlet Wastewater Servicing recommended an interim service area for North Talbot Trunk Sewer. The interim service area was determined based on the assumption that the Town would permit the DeIDuca (8<sup>th</sup> Concession Road and North Talbot Road) development to proceed in advance of the construction of the Southwest Trunk Sewer.

Flow from the revised Interim North Talbot Trunk Sewer service area will still be limited to 85 L/s as identified in the 2004 Wastewater Agreement between the City of Windsor and the Town of Tecumseh. The revised Interim North Talbot Trunk Sewer service area is shown in **Figure 2.4**.

### **2.4 REVISIONS TO SOUTHWEST TECUMSEH TRUNK SEWER SERVICE AREA**

The Southwest Tecumseh Trunk Sewer provides an outlet for wastewater generated by existing and new development in the Oldcastle Hamlet area to the LRPCP via the North-East Windsor Trunk Sanitary Sewer.

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SERVICE AREAS**

The Town of Tecumseh has constructed the North-East Windsor Trunk Sanitary Sewer up to the south side of the intersection of Banwell Road and County Road 22 (EC Row Expressway). This new trunk facility provides a new outlet for the Town of Tecumseh with discharge to the LRPCP. By Agreement with the City of Windsor, the outlet at Banwell Road is limited to a maximum peak flow rate of 1,308 L/s, including an allowance of 325 L/s from the Oldcastle Hamlet.

Since the Southwest Tecumseh Trunk Sewer hasn't been built, there are no trunk sewer facilities currently in existence in the southwest portion of the Oldcastle Hamlet area. The Southwest Tecumseh Trunk Sewer on 8th Concession Road from Highway 401 to North Talbot Road, and on Oldcastle Road from North Talbot Road to Highway 3, is to be constructed to provide an outlet to the LRPCP for wastewater generated by existing and new development in the Oldcastle Hamlet area.

The Oldcastle Hamlet Wastewater Servicing Preliminary Design Report identified the service area for the Southwest Tecumseh Trunk Sewer. The proposed service area that is to be serviced by the Southwest Tecumseh Trunk Sewer included the Skyway Plaza and the Piccadilly Circus Subdivisions, which are currently serviced by local sewers draining to the Skyway Plaza WWTP. Since the Town needs to decommission the Skyway Plaza WWTP immediately to address the capacity and performance issues for this facility, wastewater from the Skyway Plaza WWTP service area is proposed to be diverted to the North Talbot Trunk Sewer on a temporary basis instead of the Southwest Tecumseh Trunk Sewer as originally proposed in the Master Plan.

Before proceeding with decommissioning of the Skyway Plaza WWTP and diverting the flow to the LRWRP via the North Talbot Trunk Sewer, it is necessary to accurately establish the boundaries of both North Talbot Trunk Sewer and the Southwest Tecumseh Trunk Sewer service areas to ensure that they meet flow restriction requirements as specified in the 2004 Wastewater Agreement between the City of Windsor and the Town of Tecumseh.

The maximum allowable flow from the revised Southwest Tecumseh Trunk Sewer service area will be maintained at 325 L/s as identified in the 2004 Wastewater Agreement between the City of Windsor and the Town of Tecumseh. To fully utilize the allowable LRPCP capacity of 325 L/s allowed by the Agreement, two areas originally serviced by the North Talbot Trunk Sewer will be instead serviced by the Southwest Tecumseh Trunk Sewer on a temporary basis. These revised service area boundaries are shown in **Figure 2.3**.

### 3.0 WASTEWATER FLOWS

#### 3.1 INTRODUCTION

Municipal wastewater flows are made up of waste discharges from residential, commercial, industrial and institutional establishments plus extraneous non-waste flow components from sources such as groundwater and surface runoff.

Extraneous flow includes inflow and infiltration (I/I). Infiltration is water entering a sewer system and service connections from the ground through such means as defective pipes, pipe joints, connections and manholes. Inflow is water discharged into a sewer system and service connections from such sources as roof leaders, cellar, yard and area drains, foundation drains, cooling water discharges, drains from springs and swampy areas, manhole covers, cross connections from storm sewers and combined sewers, catch basins, storm water, surface runoff and street washes or drainage. In general, inflow increases with the amount of precipitation. Increases in inflow have also been observed during winter thaws that produce runoff from melting of accumulated snow cover.

Projected wastewater flow is developed from a review of the completed Master Plan and amendments, the Preliminary Design Report for the Oldcastle Hamlet Wastewater Servicing, and historical flow data from the Skyway Plaza WWTP for the years 2010 to 2012.

#### 3.2 HISTORIC WASTEWATER FLOWS TO THE SKYWAY PLAZA WWTP

Sewage flow data from the Skyway Plaza WWTP service area for the years 2010 to 2012 obtained from the Ontario Clean Water Agency (OCWA) are shown in **Table 3.1**. The OCWA did not act as operating authority until July 1, 2010. Any flow data input prior to this date was received from the former operating authority.

<b>Month \ Year</b>	<b>2012</b>	<b>2011</b>	<b>2010</b>
January	111	70	54
February	91	113	63
March	95	162	94
April	76	135	73
May	75	129	74
June	53	83	63
July	64	76	64
August	57	87	44
September	39	103	50
October	31	95	53
November	32	109	54
December		124	56

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 WASTEWATER FLOWS**

It is also noted that the average daily raw flows started to decrease in late spring / early summer around April - May of 2012. The OCWA initially assumed that less rain was a contributing factor. However, after further investigations, it was found in the late fall of 2012 that the flow meter was no longer accurate. It was found to be reading low from April 2012 to December 2012. The flow meter has subsequently been replaced by the OCWA. As of January 2013, flow readings appear to be accurate.

Sewage flow data from the Skyway Plaza WWTP service area for the years 2010 to 2012 were analyzed and the average, maximum and minimum monthly flows expressed as cubic meters/day (m<sup>3</sup>/d) are shown in **Table 3.2**.

<b>Table 3.2 Summary of Skyway Plaza WWTP Sewage Flows 2010 to 2012</b>			
	<b>Average Flow m<sup>3</sup>/d</b>	<b>Max Monthly Flow m<sup>3</sup>/d</b>	<b>Min Monthly Flow m<sup>3</sup>/d</b>
<b>2010</b>	62	94 (March)	44 (August)
<b>2011</b>	107	162 (March)	70 (January)
<b>2012</b>	66	111 (January)	31 (October)

In 2011, the average raw sewage flow was 107 m<sup>3</sup>/d, which is approximately 123% of the C of A average day rated capacity of 87 m<sup>3</sup>/day. The plant frequently experiences periods of high flows for extended durations that are often associated with snow melt or wet weather events. Based on the 2011 flow records, a minimum monthly flow of 70 m<sup>3</sup>/d and a maximum monthly flow of about 162 m<sup>3</sup>/d were recorded, suggesting a high level of extraneous flow (infiltration and/or inflow, I/I) entering the collection system.

**3.3 PROJECTED WASTEWATER FLOWS**

**Figure 3.1** shows the service area boundary for the existing Skyway Plaza WWTP. It is counted that there are 60 lots in total including 7 lots to be built within the area which are presently serviced by the Skyway Plaza WWTP. The Industrial/Commercial/Institutional (ICI) Development area is 13.2 hectares including 2.8 hectares of undeveloped area.

**Table 3.3** summarize the present and future wastewater flow projections for the areas serviced by the Skyway Plaza WWTP. The average per capita sewage flow including extraneous flow has been established for each respective service area based on a review of the design criteria utilized for the Tecumseh Water and Wastewater Master Plan Update, Preliminary Design Report for the Oldcastle Hamlet Wastewater Servicing, the MOE Design Guidelines for Sewage Works, the historical flow records at the existing Skyway Plaza WWTP and updated information developed through the wastewater servicing review process with Town staff.

According to the MOE Design Guidelines (2008) for Sewage Works, the recommended design value for average daily domestic flow ranges from 315 Lpcpd to 540 Lpcpd including an average extraneous flow allowance of 90 Lpcpd. The MOE Design Guidelines also recommend an



**TOWN OF TECUMSEH ADDENDUM TO WATER AND WASTEWATER MASTER PLAN  
 OLDCASTLE HAMLET WASTEWATER SERVICING  
 WASTEWATER FLOWS**

allowance of 227 Lpcpd for peak extraneous flow and recommend the domestic component of the peak sewage flow be calculated using peaking factors in accordance with the Harmon Formula. The Preliminary Design Report for Oldcastle Hamlet Wastewater Servicing recommends an average daily wastewater flow of 390 Lpcpd including an average extraneous flow allowance of 90 Lpcpd. In this report, an average per capita wastewater flow of 390 Lpcpd for residential and 10,500 L/ha/day for ICI development, which were recommended in the Preliminary Design Report, have been assumed for areas which are presently serviced by the Skyway Plaza WWTP.

<b>Table 3.3 Projected Average Daily Wastewater Flows (m<sup>3</sup>/d)</b>			
<i>Parameter</i>	<i>Number of Dwellings or ICI Development Area</i>	<i>Unit Flow</i>	<i>Wastewater Flow (m<sup>3</sup>/d)</i>
<b>Present</b>			
Dwellings (3.2 persons per unit <sup>1</sup> )	53 units	390 L/cap·day <sup>1</sup>	66
Industrial/Commercial/Institutional (ICI) Development	10.4 ha	10,500 L/ha·day <sup>1</sup>	109
<i>Total Wastewater Flow - present</i>	-	-	175
<b>Future</b>			
Dwellings (3.2 persons per unit <sup>1</sup> )	60 units	390 L/cap·day <sup>1</sup>	75
Industrial/Commercial/Institutional (ICI) Development	13.2	10,500 L/ha·day <sup>1</sup>	139
<i>Total Wastewater Flow - Ultimate</i>	-	-	214

Note: 1. Taken from design criteria presented in 'Oldcastle Hamlet Wastewater Servicing, Preliminary Design Report, AECOM, August 7, 2009'

**Table 3.3** shows that the present wastewater flow is estimated to be 175 m<sup>3</sup>/d, which is very close to the maximum monthly average daily flow of 162 m<sup>3</sup>/d recorded at the Skyway Plaza WWTP, indicating that the design criteria assumed for flow projection are adequate. By applying these design criteria to the undeveloped residential and ICI development area, the projected ultimate average daily sewage flow is 214 m<sup>3</sup>/d for areas which are presently serviced by the Skyway Plaza WWTP.

## **4.0 DESIGN ALTERNATIVES**

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Decommissioning of the Skyway Plaza WWTP, described further in Section 5.1, is included in the work required for all alternatives. The opinion of probable cost for decommissioning the WWTP is **\$62,000** excluding taxes, engineering, contingency and easements. The following summarizes the additional work and probable costs of each design alternative considered.

### **4.1 ALTERNATIVE NO. 1 (PREFERRED)**

Alternative No. 1 generally consists of a deep 250mm dia. sanitary sewer installed along Brendan Lane and DiCocco Court, including manholes and restoration. The opinion of probable cost for this alternative is **\$612,200** excluding taxes, engineering, contingency and easements.

Alternative No. 1 was selected as the preferred alternative due to the comparatively lower cost and to eliminate the need for a pumping station.

### **4.2 ALTERNATIVE NO. 2**

Alternative No. 2 generally consists of a 200mm dia. sanitary sewer installed at a shallower depth than the Alternative No. 1 sewer along Brendan Lane and a 75mm dia. forcemain installed along DiCocco Court, including pumping station upgrades, manholes and restoration. The opinion of probable cost for this alternative is **\$714,800** excluding taxes, engineering, contingency and easements.

Alternative No. 2 was set aside due to the additional cost and maintenance requirements associated with the pumping station.

### **4.3 ALTERNATIVE NO. 3**

Alternative No. 3 generally consists of a 75mm dia. sanitary forcemain installed along McCord Lane and Walker Road to North Talbot Road, including pumping station upgrades and restoration. The opinion of probable cost for this alternative is **\$696,500** excluding taxes, engineering, and contingencies.

Alternative No. 3 was also set aside due to the additional cost and maintenance requirements associated with the pumping station.

### **4.4 ALTERNATIVE NO. 4**

Alternative No. 4 generally consists of extending the existing sanitary sewer along McCord Lane with a new 250 and 350mm dia. sanitary sewer along Walker Road to North Talbot Road, including manholes and restoration. The opinion of probable cost for this alternative is **\$909,100** excluding taxes, engineering, and contingencies.

Alternative No. 4 was also set aside due to the additional cost.

## **5.0 PROPOSED DESIGN**

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### **5.1 DECOMMISSIONING OF THE SKYWAY PLAZA WWTP**

The Skyway Plaza WWTP, which was constructed in 1998, is a temporary wastewater treatment facility to service a commercial plaza and a 22 lot residential subdivision. The plant has a rated capacity of 87 m<sup>3</sup>/d. The existing Skyway Plaza WWTP consists of a primary settling tank, rotating biological contactor, final clarifier, chemical feed system and UV disinfection facility. Effluent from the treatment plant currently discharges to a storm sewer.

The flow records for the past few years indicates that wastewater flow into the Skyway Plaza WWTP often exceed the rated design capacity of 87 m<sup>3</sup>/d. The Skyway Plaza WWTP also experiences periods of poor effluent quality which is considered to be attributed to high flows. The Town has been requested by the MOE to address the capacity and effluent quality issues associated with the Skyway Plaza WWTP.

The Skyway Plaza and the Piccadilly Circus Subdivisions within the Oldcastle Hamlet are serviced by local sewers draining to the Skyway Plaza WWTP. There are no trunk sewer facilities currently in existence in the area serviced by the Skyway Plaza WWTP. The Town intends to build a sanitary sewer along Dicocco Court and Brendan Lane starting from the Skyway Plaza WWTP inlet manhole and connect the new sewer to the newly built North Talbot Trunk Sewer on a temporary basis. When the southwest Tecumseh Trunk Sewer is extended, flows from this area will be redirected to the Southwest Tecumseh Trunk Sewer. Upon completion of the new sanitary sewers along Dicocco Court and Brendan Lane, the Town plans to decommission the Skyway Plaza WWTP and divert wastewater flows from the decommissioned plant to the LRWRP.

It is proposed to cap the piping to the Skyway Plaza WWTP in the existing manhole located on the north-west corner of the intersection of McCord Lane and Dicocco Court and remove the existing pumping station and adjacent packaged sewage treatment plant.

The existing Skyway Plaza WWTP is enclosed in a pole barn that is also slated for removal. The Town is currently inquiring to see if there are any parties that might be interested in re-purposing either the sewage treatment equipment or the building that is currently used to enclose it once the treatment plant is decommissioned.

### **5.2 SANITARY SEWER ALONG DICOCO COURT AND BRENDAN LANE**

**Figure 3.2** shows the general alignment of the proposed sanitary sewer along Dicocco Court and Brendan Lane starting from the Skyway Plaza WWTP inlet manhole to the newly built North Talbot Trunk Sewer at the intersection of Brendan Lane and North Talbot Road. The proposed sanitary sewer provides conveyance for the wastewater flows from the commercial plaza and

residential subdivision within the Oldcastle Hamlet to the outlet to the LRWRP in the City of Windsor.

The proposed 250 mm diameter sanitary sewer is sized to handle a peak flow of 29.1 L/s, which is established by the size and slope of the sewer pipes. The capacity of the proposed sewer is appropriate for servicing the Skyway Plaza and the Piccadilly Circus Subdivisions within the Oldcastle Hamlet presently serviced by the Skyway Plaza WWTP as well as industrial/commercial properties along both sides of Brendan Lane fronting onto the proposed new sewer. The service area boundary for the proposed sanitary sewer is also shown in **Figure 3.2**. Once the proposed sanitary sewer is constructed, the Town will decommission the Skyway Plaza WWTP in the Oldcastle Hamlet and flows will be diverted from the Skyway Plaza WWTP to the North Talbot Trunk Sewer.

## **6.0 ENVIRONMENTAL IMPACTS OF PROPOSED DESIGN**

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Flow diversion from the Skyway Plaza WWTP to the LRWRP instead of LRPCP as outlined in the Master Plan does not change the potential impacts or proposed methods of mitigation identified in the Master Plan.

### **Stop Pollution of Local Water Courses**

The proposed sanitary sewer will collect and deliver sewage from the Skyway Plaza WWTP to the LRWRP which will discharge a treated effluent to the Detroit River that meets current MOE standards. The construction of the proposed sanitary sewer will permit the immediate decommissioning of the existing Skyway Plaza WWTP which was found to have effluent quality issues and to be a potential source of pollution in local water courses. This is the most important beneficial environmental impact of the proposed sanitary sewer, which allows the Town to immediately decommission the Skyway Plaza WWTP and divert the flow from the Skyway Plaza WWTP to the LRWRP in the City of Windsor.

### **Heritage Resources**

The proposed sanitary sewer is to be constructed along the existing road. It appears all of the area for the construction of the proposed sanitary sewer has been disturbed by previous construction. These areas have low potential for the discovery of Aboriginal or Euro-Canadian resources.

### **Trees in the Sewer Alignment**

Small healthy trees interfering with the sewer alignments would be relocated. For larger healthy trees that cannot be easily relocated, directional drilling procedures would be specified for installation of pipes under the large trees. Trees interfering with alignment of sewers or forcemains that are assessed in poor condition will be removed during construction.

It is anticipated that no trees will be impacted by the proposed sanitary sewer construction.

### **Disruption of Traffic**

Construction of the proposed sanitary sewers will result in temporary detours or lane restrictions that will disrupt traffic in the area and interfere with access for some residents and businesses. All emergency services must be notified of detours prior to commencement of construction. Services that may experience temporary detours or delays include school buses, mail delivery and garbage collection.

Every effort will be made during construction to maintain safe traffic flow through the site and minimize the delays. At the end of the day, the road will be fully opened to traffic whenever possible.

### **Inconvenience during Sewer Construction**

Construction activities will create noise and traffic from construction vehicles resulting in temporary inconvenience to residents and businesses.

Every effort will be made during the construction to minimize the noise produced during construction. The Contractor will not be permitted to work at night and the road will be fully opened to traffic at the end of the day whenever possible.

### **Municipal Drains**

The proposed sanitary sewer alignment crosses the Wolfe Drain, which is a municipal drain. This drain provides an outlet for the majority of properties in the former Oldcastle area. At the location of the proposed crossing, the Wolfe Drain is a covered drain within an approximately 1050 mm dia. corrugated steel pipe. The sanitary sewer is expected to be constructed by jacking and boring across the Wolfe Drain. During construction the Wolfe Drain will be properly supported to maintain flow in the drain throughout construction.

### **Private Property**

The proposed sanitary sewer alignment crosses private properties between Brendan Lane and DiCocco Court. An easement will be required to construct and maintain the sanitary sewer through these properties. **Figure 6.1** depicts the proposed easement. A watermain easement exists through the same properties adjacent to the proposed sanitary sewer easement. At some locations, the proposed sanitary easement overlaps the existing watermain easement.

During construction, every effort will be taken to maintain business operations and keep disruptions to a minimum.

## 7.0 OPINION OF PROBABLE COST

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### 7.1 GENERAL

This chapter discusses and provides an opinion on the probable cost for design and construction of the recommended design concept including:

- Demolition of Skyway Plaza WWTP
- Construction of 250 mm diameter gravity sanitary sewer to divert flow from the Skyway Plaza WWTP to the LRWRP via the newly built North Talbot Trunk Sewer

An opinion of probable cost can be described as an attempt to project what someone else would be willing to contract for in the future to do construction work which has not yet been defined and which is subject to changes in scope, design, and market conditions.

### 7.2 LEVEL OF ACCURACY

Opinions of probable cost are typically provided throughout various stages of a project's life cycle. There are a number of classifications for estimates that identify typical minimum and maximum probable costs or levels of accuracy. These classifications vary widely by industry but all are based on the fact that the level of accuracy is directly proportional to the level of detail available at the time the opinions of probable cost are prepared at each stage of the project.

The level of accuracy of the opinion increases as the project moves through the various stages of the project life cycle from planning to preliminary design to final design. A wide range of accuracy would be expected at the planning stage of project development because a number of details would be unknown. As the project moves closer to completion of final design, the opinion of probable cost would become more accurate due to the increased level of detail available and the reduced number of unknown issues.

The following **Table 7.1** summarizes typical cost classifications throughout a project's life cycle including a description of the project stage and range of accuracy.

The opinions of probable cost in **Section 7.3** below are estimated at the preliminary stage (Class 3) and the corresponding level of accuracy could range from -10% to +25% from the opinion presented in the report.

<b>Table 7.1 Classification of Cost Estimates</b>			
<b>Class</b>	<b>Description</b>	<b>Level of Accuracy</b>	<b>Stage of Project Lifecycle</b>
1	Conceptual Stage	+50% to -30%	Screening of alternatives.
2	Study Stage	+30% to -15%	Treatment system master plans.
3	Preliminary Stage	+25% to -10%	Pre-design report.
4	Detailed Stage	+15% to -5%	Completed plans and specifications.
5	Tender Stage	+10% to -3%	This is the actual tender price and it can vary depending on the amount of contingency allowance consumed.

### **7.3 OPINION OF PROBABLE COST**

The opinion of probable costs for the proposed improvements is presented below in **Table 7.2**.

The opinion of probable cost has been prepared taking into consideration the following factors.

- All estimates are 2013 dollars based on an Engineering News Record (ENR) Construction Cost Index of 1097 for Toronto (December 2012).
- It is assumed the Contractor will have unrestricted access to the site and will complete the work during normal working hours from 7:00 am to 6:00 pm Monday to Friday. There is no allowance for premium time included.
- Labour costs are based on union labour rates for the Windsor area.
- An allowance is included for mobilization and demobilization and the Contractor's overhead and profit.
- Equipment costs are based on vendor supplied price quotations and historical pricing of similar equipment.
- Bulk material and equipment rental costs used are typical for the Windsor area.
- The estimate does not include the cost of application or permit fees.
- All taxes including HST is not included.
- Allowances for engineering and contingencies (15% and 15% respectively) are included.
- No allowance is included for interim financing costs or legal costs.
- The easement cost is preliminary only. Actual cost may vary significantly.
- No allowance is included for escalation beyond the date of this report.



**TOWN OF TECUMSEH ADDENDUM TO WATER AND WASTEWATER MASTER PLAN  
 OLDCASTLE HAMLET WASTEWATER SERVICING  
 OPINION OF PROBABLE COST**

<b>Table 7.2 OPINION OF PROBABLE COST</b>		
<b>Item</b>	<b>Explanation/ Reference</b>	<b>Probable Cost</b>
<b>Demolition of Skyway Plaza WWTP</b>	Section 5.1	\$ 62,000
<b>Construction of 250 mm dia. diversion sewer from Skyway Plaza WWTP to the LRWRP via the newly built North Talbot trunk sewer (Excludes service connections, watermain and storm sewer improvements)</b>	Section 5.2	\$ 612,200
<b>Sub-Total</b>		\$ 674,200
<b>Contingency Allowance (15%)</b>		\$ 101,100
<b>Engineering, Inspection and Contract Administration (15%)</b>		\$ 116,300
<b>Easement Acquisition</b>		\$ 50,000
<b>TOTAL CONSTRUCTION COST (Taxes Excluded)</b>		<b>\$ 941,600</b>

## **8.0 SUMMARY**

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### **8.1 RECOMMENDATIONS**

It is recommended that the Town proceed to detailed design and construction of the following sewage works in accordance with available funding from the capital budget:

- Demolition of Skyway Plaza WWTP
- Construction of 250 mm diameter gravity sanitary sewer to divert flow from Skyway Plaza WWTP to the LRWRP via the newly built North Talbot Trunk Sewer

Proposed sewage works which have been identified in this addendum are considered as a Schedule “B” project under the Municipal Engineers Association (MEA) Class Environmental Assessment Act (Class EA). This addendum along with the Master plan is prepared in accordance with the Class EA process. Hence, the Town may proceed to detailed design followed by construction and commissioning.

### **8.2 PERMITS AND APPROVALS**

A Ministry of Environment (MOE) Environmental Compliance Approval (ECA) (formerly known as a Certificate of Approval) is to be obtained prior to tendering of the project. The ECA is to be obtained by applying for an amendment to the current Certificate of Approval. Application is to be made upon completion of the design brief followed by completion of the detailed design drawings and specifications. A permit will also be required from the Essex Regional Conservation Authority (ERCA) to cross the Wolfe Drain. The permit should be obtained prior to tendering the project.

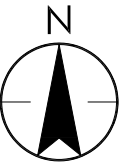
Stantec is not aware of any other regulatory permits and approvals that are necessary with respect to the proposed improvements.

### **8.3 PROJECT & CONSTRUCTION SCHEDULE**

Project & construction schedule is subject to the following activities:

- Completion of the addendum to the Master Plan during July and August 2013
- Commence detailed design and preparation of specifications and contract documents during August 2013;
- Submit MOE application for environmental compliance approval (ECA) in August 2013
- Public tender in September, 2013 for construction bids with award of contract in October of 2013;
- Commence construction in November 2013 with final commissioning anticipated in summer of 2014.

OLDCASTLE  
HAMLET



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LAKE ERIE



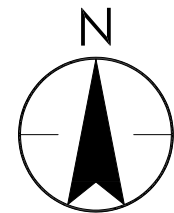
TOWN OF TECUMSEH  
ADDENDUM TO WATER AND WASTEWATER MASTER PLAN  
OLDCASTLE HAMLET WASTEWATER SERVICING

KEY PLAN OF ESSEX COUNTY

PROJECT NO.  
165601293  
DATE:  
2013.09.13

DRAWING NO.  
FIGURE 1.1

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- NORTH TALBOT TRUNK SEWER TO LRWRP (LOU ROMANO WATER RECLAMATION PLANT)
- SOUTHWEST TECUMSEH TRUNK SEWER TO LRPCP (LITTLE RIVER POLLUTION CONTROL PLANT)
- OLDCASTLE HAMLET STUDY AREA BOUNDARY
- CITY OF WINDSOR / TOWN OF TECUMSEH BOUNDARY



**TOWN OF TECUMSEH  
 ADDENDUM TO WATER AND WASTEWATER MASTER PLAN  
 OLDCASTLE HAMLET WASTEWATER SERVICING**

**WASTEWATER SERVICING STRATEGY IDENTIFIED  
 IN THE MASTER PLAN**

PROJECT NO. 165601293	0 200 600 1000m	DRAWING NO.
DATE: 2013.09.13	1:20000	<b>FIGURE 1.2</b>

# TOWN OF TECUMSEH ZONING MAP

- as of January, 2009 -



## Legend

- AGRICULTURAL
- BUSINESS
- COMMERCIAL
- HIGHWAY SERVICE CENTRE
- INDUSTRIAL
- INSTITUTIONAL
- RECREATION
- RESIDENTIAL



DISCLAIMER  
The information within this map is provided for informational purposes only. It is not intended to be used as a legal document or to create any legal rights. The Corporation of the Town of Tecumseh assumes no liability for any errors or omissions that may appear in this map.



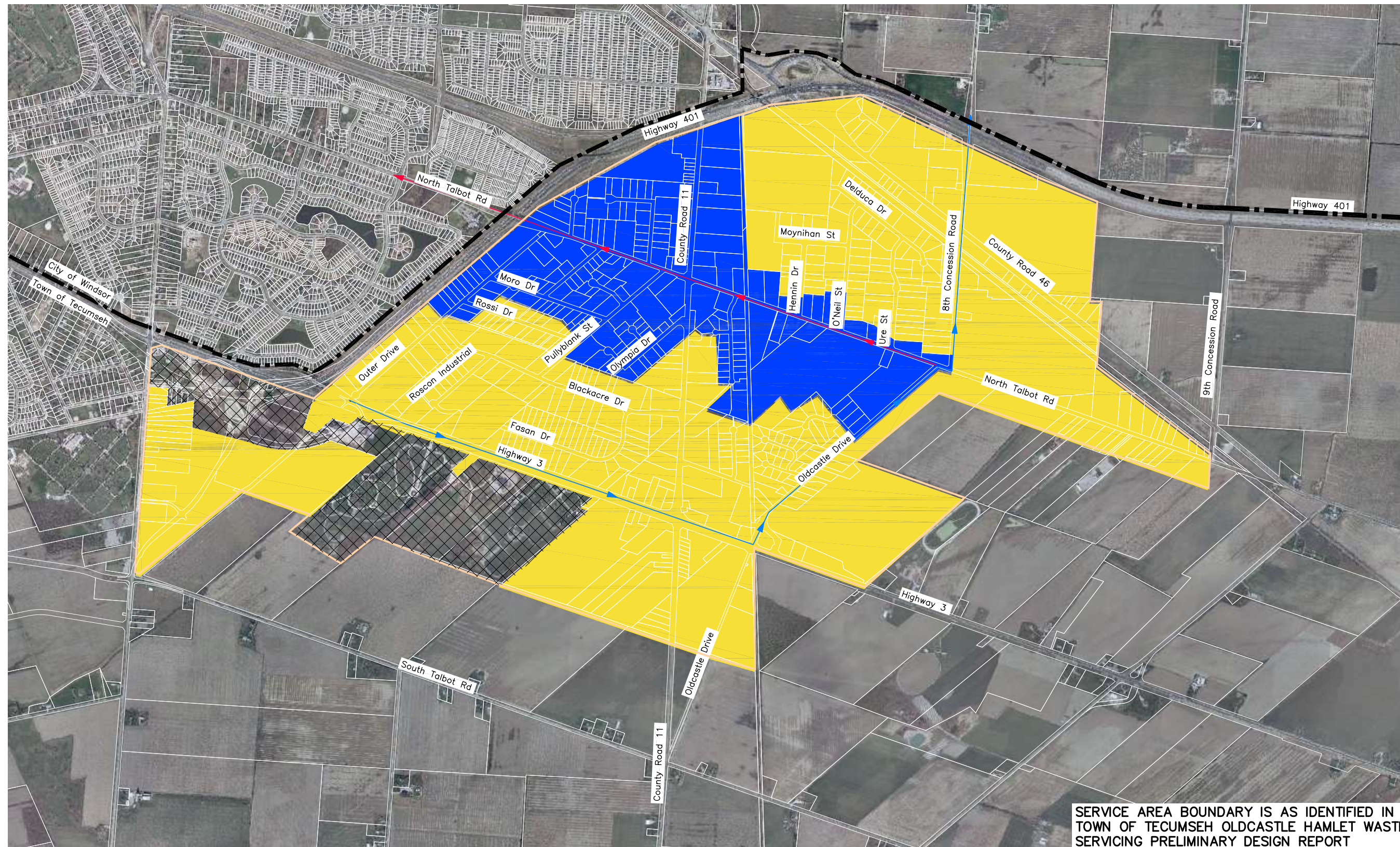
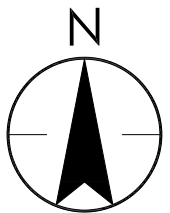
TOWN OF TECUMSEH  
ADDENDUM TO WATER AND WASTEWATER MASTER PLAN  
OLDCASTLE HAMLET WASTEWATER SERVICING

OFFICIAL PLAN LAND USE FOR OLDCASTLE HAMLET

PROJECT NO.  
165601293  
DATE:  
2013.09.13

DRAWING NO.  
FIGURE 2.1

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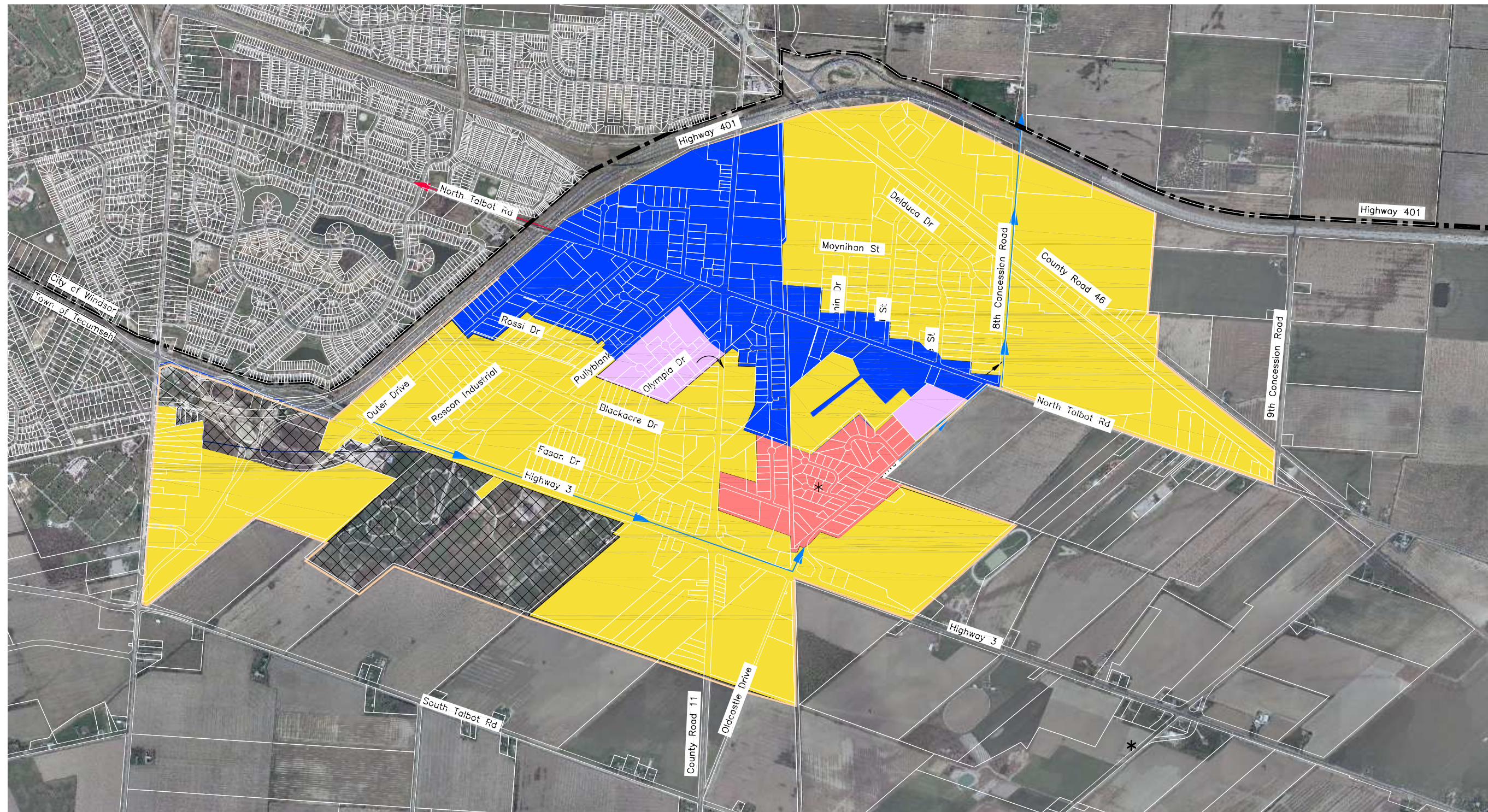
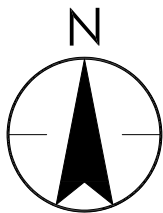


SERVICE AREA BOUNDARY IS AS IDENTIFIED IN THE TOWN OF TECUMSEH OLDCASTLE HAMLET WASTEWATER SERVICING PRELIMINARY DESIGN REPORT DATED AUG. 7, 2009.

- EXISTING NORTH TALBOT TRUNK SEWER TO LRWRP (LOU ROMANO WATER RECLAMATION PLANT)
- FUTURE SOUTHWEST TECUMSEH TRUNK SEWER TO LRPCP (LITTLE RIVER POLLUTION CONTROL PLANT)
- OLDCASTLE HAMLET STUDY AREA BOUNDARY
- CITY OF WINDSOR / TOWN OF TECUMSEH BOUNDARY
- AREA SERVICED BY NORTH TALBOT TRUNK SEWER TO LRWRP
- AREA SERVICED BY SOUTHWEST TECUMSEH TRUNK SEWER TO LRPCP
- AREA EXCLUDED FROM WASTEWATER SERVICING

		<b>TOWN OF TECUMSEH</b> <b>ADDENDUM TO WATER AND WASTEWATER MASTER PLAN</b> <b>OLDCASTLE HAMLET WASTEWATER SERVICING</b>	
		<b>EXISTING AND FUTURE TRUNK SEWERS AND</b> <b>CORRESPONDING SERVICE AREA BOUNDARY</b>	
PROJECT NO. 165601293	DATE: 2013.09.13		DRAWING NO. <b>FIGURE 2.2</b>

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- EXISTING NORTH TALBOT TRUNK SEWER TO LRWRP (LOU ROMANO WATER RECLAMATION PLANT)
- FUTURE SOUTHWEST TECUMSEH TRUNK SEWER TO LRPCP (LITTLE RIVER POLLUTION CONTROL PLANT)
- OLDCASTLE HAMLET STUDY AREA BOUNDARY
- CITY OF WINDSOR / TOWN OF TECUMSEH BOUNDARY
- AREA SERVICED BY LRWRP
- SERVICE AREA TO BE REDIRECTED FROM LRWRP TO LRPCP (PROPOSED TEMPORARY SEWER SERVICE AREA CHANGE)
- AREA SERVICED BY LRPCP
- SERVICE AREA CHANGED FROM LRWRP TO LRPCP (THIS AREA OR OTHER EQUIVALENT AREAS CAN BE REDIRECTED FROM THE LRWRP TO LRPCP IF THE PROPOSED TEMPORARY SEWER SERVICE AREA CHANGE BECOMES PERMANENT).
- AREA EXCLUDED FROM WASTEWATER SERVICING

**PROPOSED TEMPORARY SEWER SERVICE AREA CHANGE. WHEN THE SOUTHWEST TECUMSEH TRUNK SEWER IS EXTENDED, FLOWS FROM THIS AREA WILL BE REDIRECTED TO BE SERVICED BY LRPCP.**

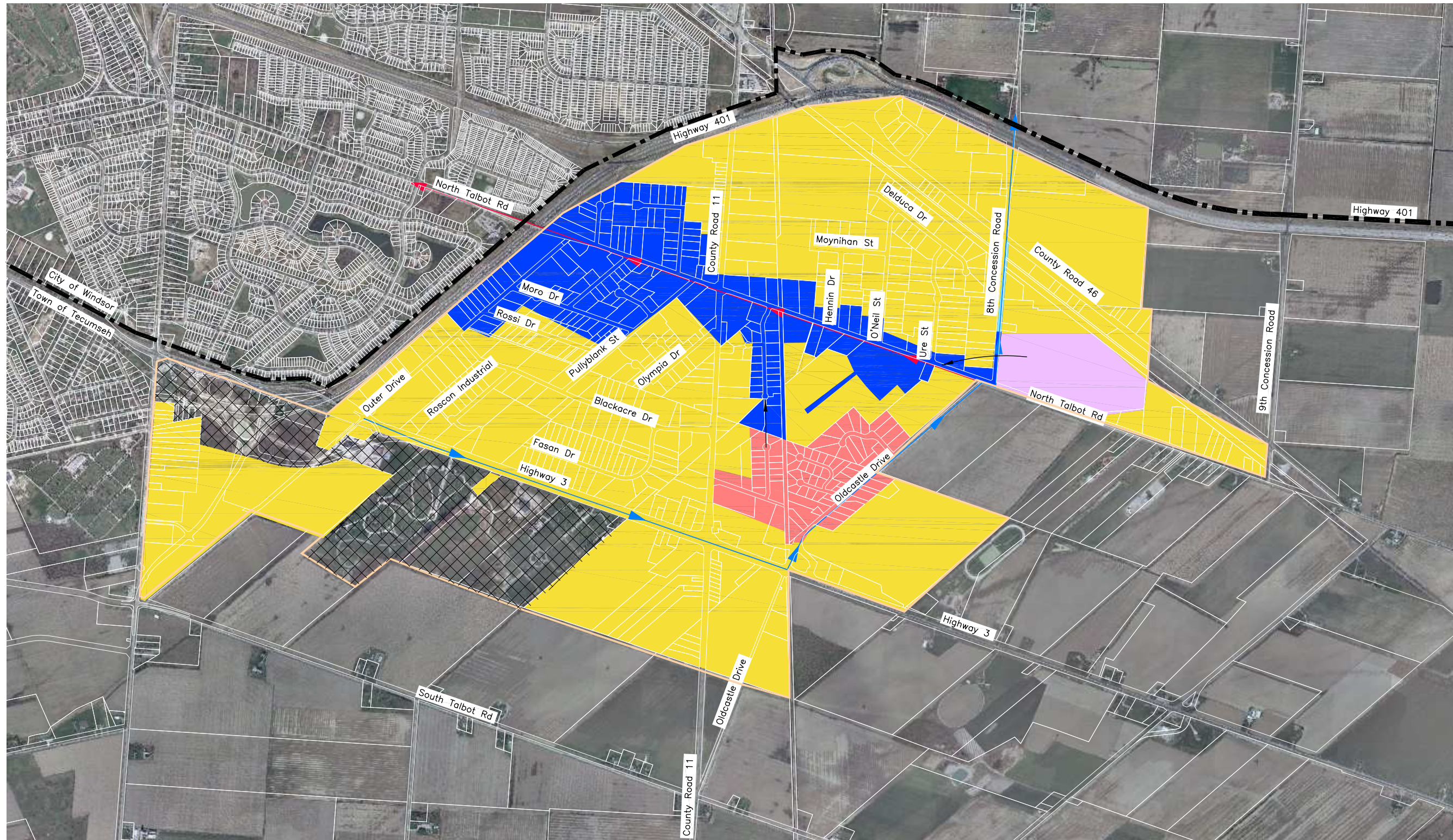
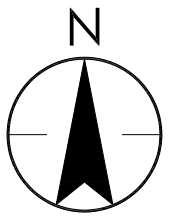
W:\active\165601293\_brendan\_jane\_tecumseh\design\drawing\civil\165601293\_FIGURE 2.3.dwg 2013-10-17 11:10am BY: jholmes



**TOWN OF TECUMSEH  
ADDENDUM TO WATER AND WASTEWATER MASTER PLAN  
OLDCASTLE HAMLET WASTEWATER SERVICING**

**REVISIONS TO SERVICE AREAS FOR NORTH TALBOT TRUNK SEWER AND SOUTHWEST TECUMSEH TRUNK SEWER**

PROJECT NO. 165601293	0 200 600 1000m	DRAWING NO.
DATE: 2013.09.13	1:20000	<b>FIGURE 2.3</b>



- EXISTING NORTH TALBOT TRUNK SEWER TO LRWRP (LOU ROMANO WATER RECLAMATION PLANT)
- FUTURE SOUTHWEST TECUMSEH TRUNK SEWER TO LRPCP (LITTLE RIVER POLLUTION CONTROL PLANT)
- OLDCASTLE HAMLET STUDY AREA BOUNDARY
- CITY OF WINDSOR / TOWN OF TECUMSEH BOUNDARY
- AREA SERVICED BY LRWRP
- SERVICE AREA TO BE REDIRECTED FROM LRPCP TO LRWRP ON A TEMPORARY BASIS
- AREA SERVICED BY LRPCP (PERMANENT AND TEMPORARY)
- SERVICE AREA CHANGED FROM LRPCP TO LRWRP ON A TEMPORARY BASIS.
- AREA EXCLUDED FROM WASTEWATER SERVICING



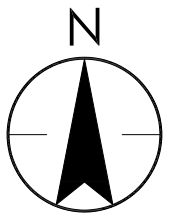
**TOWN OF TECUMSEH  
ADDENDUM TO WATER AND WASTEWATER MASTER PLAN  
OLDCASTLE HAMLET WASTEWATER SERVICING**




**REVISIONS TO INTERIM SERVICE AREA FOR  
NORTH TALBOT TRUNK SEWER**

PROJECT NO. 165601293	0 200 600 1000m	DRAWING NO.
DATE: 2013.09.13	1:20000	<b>FIGURE 2.4</b>



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-  EXISTING SANITARY GRAVITY MAINS
-  EXISTING SANITARY MANHOLES
-  EXISTING SANITARY DRAINAGE AREA

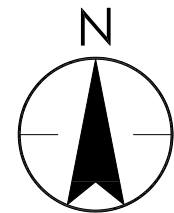


**TOWN OF TECUMSEH  
ADDENDUM TO WATER AND WASTEWATER MASTER PLAN  
OLDCASTLE HAMLET WASTEWATER SERVICING**

**EXISTING SKYWAY PLAZA WWTP AND SANITARY SEWERS**

PROJECT NO. 165601293	0 50 150 250m	DRAWING NO.
DATE: 2013.09.13	1:5000 	<b>FIGURE 3.1</b>

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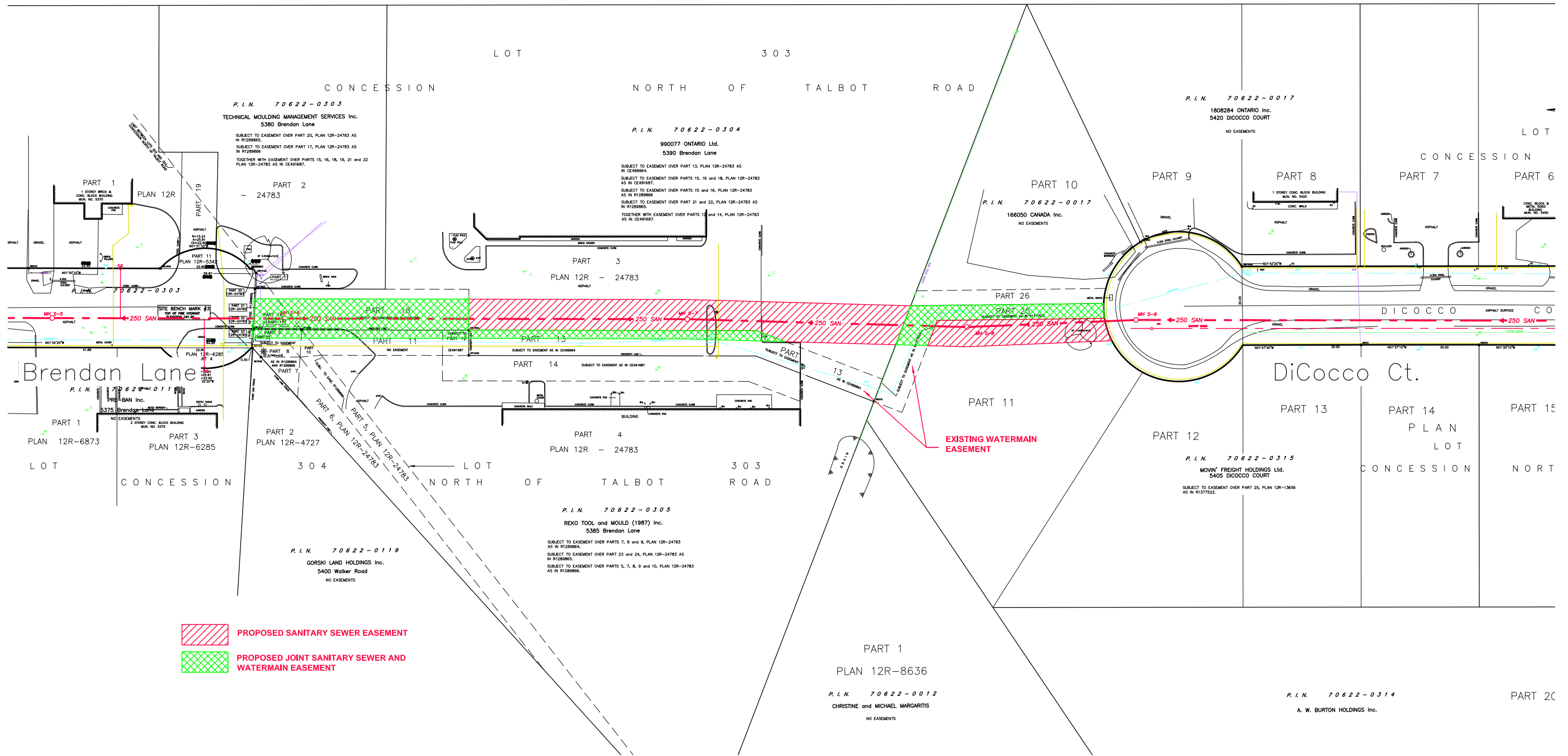
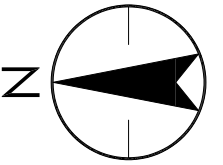
- EXISTING SANITARY SEWER
- EXISTING TRUNK SANITARY SEWER
- PROPOSED SANITARY SEWER
- SERVICE AREA BOUNDARY FOR PROPOSED SANITARY SEWER



**TOWN OF TECUMSEH  
 ADDENDUM TO WATER AND WASTEWATER MASTER PLAN  
 OLDCASTLE HAMLET WASTEWATER SERVICING**

**PROPOSED BRENDAN LANE SANITARY SEWER  
 AND CORRESPONDING SERVICE AREA**

PROJECT NO. 165601293	0 50 150 250m	DRAWING NO.
DATE: 2013.09.13	1:5000	<b>FIGURE 3.2</b>



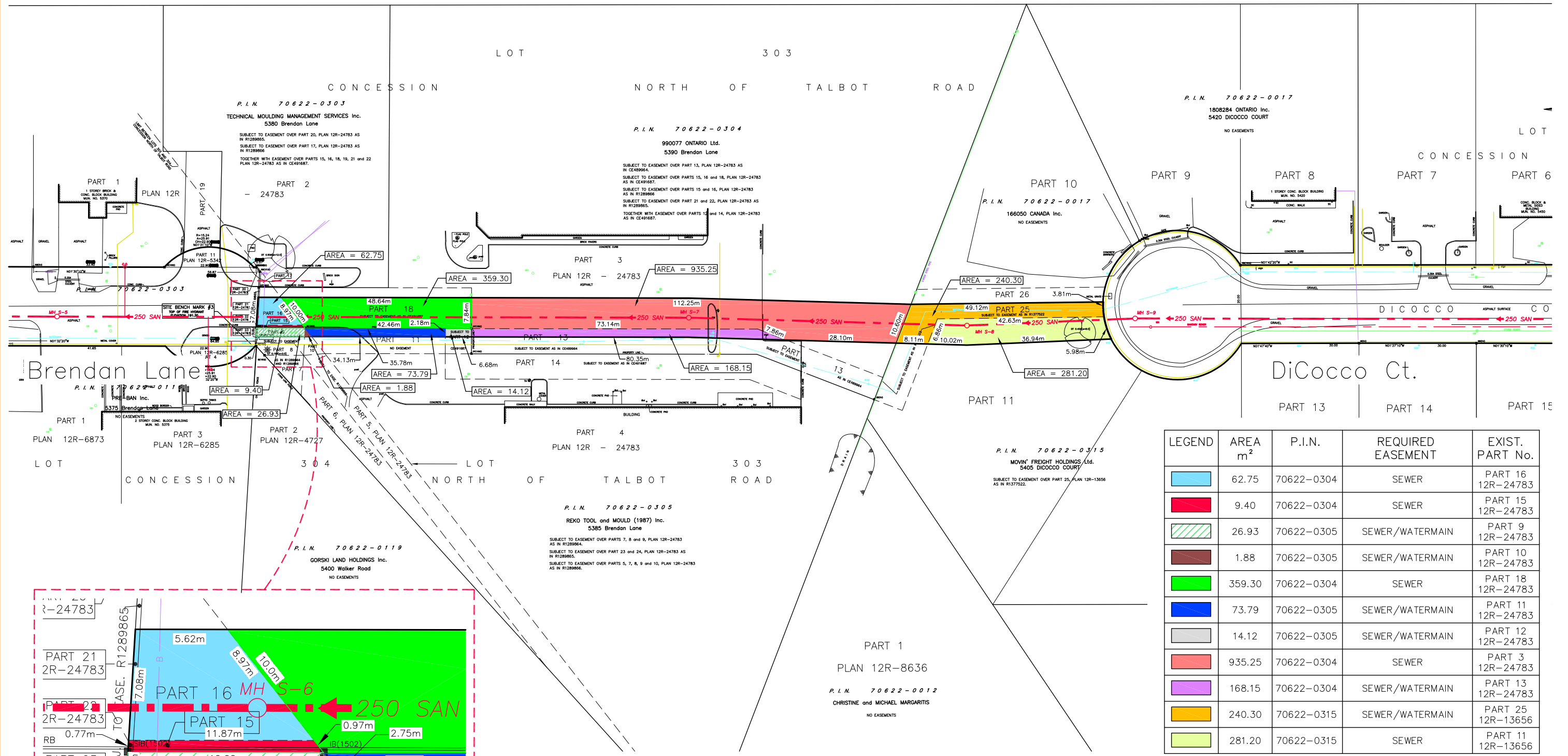
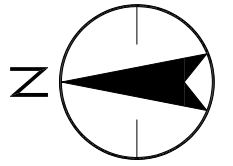
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2013-10-17 11:19am BY: jholmes



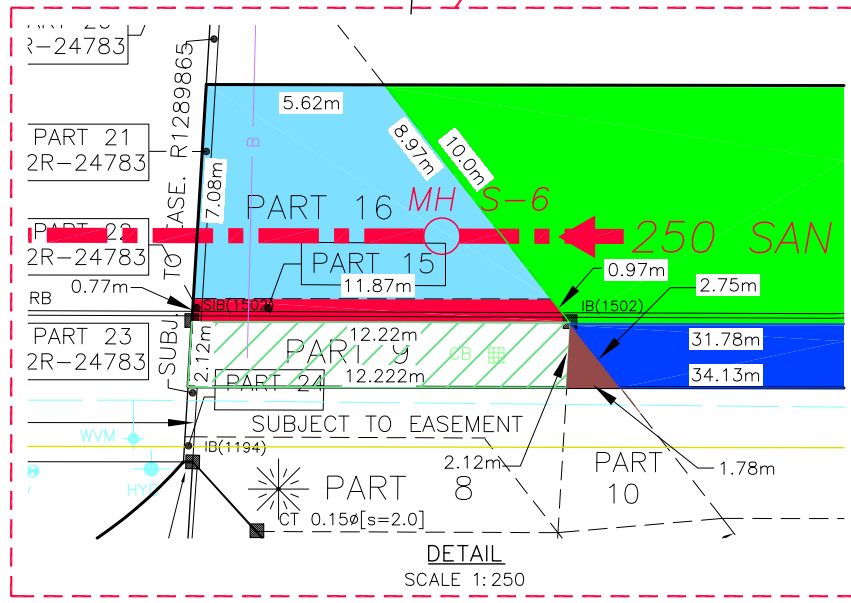
TOWN OF TECUMSEH  
ADDENDUM TO WATER AND WASTEWATER MASTER PLAN  
OLDCASTLE HAMLET WASTEWATER SERVICING

SANITARY SEWER EASEMENT REQUIREMENT

PROJECT NO. 165601293	0 10 30 50m	DRAWING NO. FIGURE 6.1
DATE: 2013.09.13	1:1000	



LEGEND	AREA m <sup>2</sup>	P.I.N.	REQUIRED EASEMENT	EXIST. PART No.
	62.75	70622-0304	SEWER	PART 16 12R-24783
	9.40	70622-0304	SEWER	PART 15 12R-24783
	26.93	70622-0305	SEWER/WATERMAIN	PART 9 12R-24783
	1.88	70622-0305	SEWER/WATERMAIN	PART 10 12R-24783
	359.30	70622-0304	SEWER	PART 18 12R-24783
	73.79	70622-0305	SEWER/WATERMAIN	PART 11 12R-24783
	14.12	70622-0305	SEWER/WATERMAIN	PART 12 12R-24783
	935.25	70622-0304	SEWER	PART 3 12R-24783
	168.15	70622-0304	SEWER/WATERMAIN	PART 13 12R-24783
	240.30	70622-0315	SEWER/WATERMAIN	PART 25 12R-13656
	281.20	70622-0315	SEWER	PART 11 12R-13656



**TOWN OF TECUMSEH**  
**ADDENDUM TO WATER AND WASTEWATER MASTER PLAN**  
**OLDCASTLE HAMLET WASTEWATER SERVICING**

**SANITARY SEWER EASEMENT REQUIREMENT**  
**WITH DIMENSIONS**

PROJECT NO. 165601293  
 DATE: 2013.09.13

1:1000

DRAWING NO. **FIGURE 6.2**

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